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## **Education Consortium For the Advancement of STEM in Egypt (ECASE)**

### **QUARTERLY PROGRESS REPORT JANUARY – MARCH 2013**



**April 30, 2013**

This publication was produced for review by the United States Agency for International Development (USAID). It was prepared by World Learning.

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The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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## Acronyms

21PSTEM	The 21 <sup>st</sup> Century Partnership for STEM Education
ACT	American College Testing (exam)
AIP	Annual Implementation Plan
AUC	American University in Cairo
BOT	Board of Trustees (school)
COP	Chief of Party
DCOP	Deputy Chief of Party
ECASE (USAID)	Education Consortium for the Advancement of STEM in Egypt
EGP	Egyptian Pounds
GILO	Girls' Improved Learning Outcomes Project (USAID)
GOE	Government of Egypt
HR	Human Resources
ICT	Information and Communications Technology
MAP	Management Assessment Protocol
M&E	Monitoring and Evaluation
MOE	Ministry of Education
MOHE	Ministry of Higher Education
NCEEE	National Center for Educational Evaluation and Examination
PAT	Professional Academy of Teachers (MOE)
PD	Professional Development
PMP	Performance Monitoring Plan
SCOPE	Standards-based Classroom Observation Protocol for Egypt
STEM	Science, Technology, (Engineering), Math
STTA	Short Term Technical Assistance
TIES	Teaching Institute for Excellence in STEM
TFI	The Franklin Institute
TILO	Technology for Improved Learning Outcomes (USAID)
WL	World Learning
US	United States of America
USAID	United States Agency for International Development

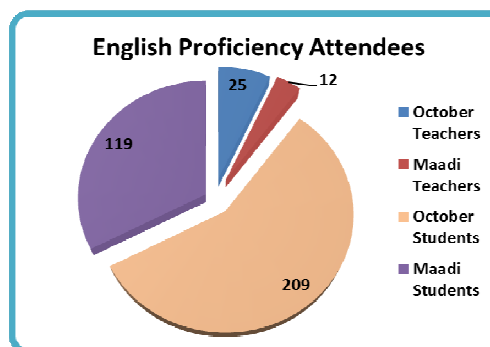
# 1. Executive Summary

This progress report details the activities that have taken place during the quarter spanning January 1 – March 31, 2013, under the USAID-funded Education Consortium for the Advancement of STEM in Egypt (ECASE) Program. Our activities proceeded in accordance with the implementation plan, despite growing challenges facing the project.

Highlights of the ECASE team's activity during the quarter include;

- ***School Design*** – The full school design process can be leveraged in the new schools (such as Mansoura and Alexandria). As such, the team is working proactively with government officials, the MOE, and other key stakeholders in each region to design schools specific to the needs of the community. The ECASE team will not only provide continued support to the Cairo schools, but will work with a team from Mansoura to open a STEM school there in September. To enable this activity, TIES will continue to follow the design process, engaging key stakeholders in Design Studios with the ultimate goal of developing a STEM School Design Blueprint. Further support will be provided to identifying and obtaining key assets for the school when it opens in the fall, including key lab equipment and other critical needs. The Blueprint will encompass the full breadth of work across the ECASE team, providing Egyptians with a roadmap for replication of STEM schools. A similar process will be carried out in Alexandria and a possible 5<sup>th</sup> school in Assuit as the Ministry approves these schools.
- ***Curriculum*** – Currently, the curriculum scope and sequence for math and science has been created as part of an 18-step process by 21PSTEM for overall curriculum development for the schools. The curriculum process will enable the creation of an overall curriculum to be completed by early June, 2013 with the intent to provide teacher professional development in the summer of 2013 for 6<sup>th</sup> of October, Ma'adi, and Mansoura schools. The curriculum will leverage the interim curriculum books, such as Active Physics and Active Chemistry and kits ordered for the schools. Further content will be developed and/or selected to supplement the full curriculum being developed. In addition to the overall curriculum, Capstone and Fab Lab content will be integrated with Curriculum 1.0 to offer students' project based learning opportunities and hands-on activities in support of the learning outcomes. In general, teachers will need further training on the Capstone process, as it became evident in late March 2013 that the role of the capstones with respect to the overall curriculum was not clear to students or teachers and that teachers required even more guidance and training than what was already in place and was thought to be highly supportive. As such, the TIES team put in place an enhancement process to assure alignment of the capstones to clear objectives and evaluation rubrics. The Capstones will culminate in an end of year poster session on April 30, 2013. The poster will be judged by a panel of university and business people, offering students a real-world opportunity to showcase their project work. In addition, students have been given extra-curricular opportunities to visit Fab Lab Cairo in support of their capstone projects. Further integration between Fab Labs, Capstones, and the Curriculum will be enabled this summer as the Curriculum 1.0 is designed and as Fab Labs are installed and the staff is trained in August.

- Professional Development** – To date, PD has focused on the training of STEM best practices for teachers and administrators. During the training sessions in January/February 2013, the TFI team focused on helping teachers transfer previous PD (Transfer, Enduring Understanding, and Essential Questions) into the classroom, emphasizing good evidence of learning. PD resulted in teachers having the ability to implement classroom projects to support student learning and to make learning connections to the Capstones. In addition, the sessions were used to initiate Professional Learning Communities (PLCs) to enable on-going practice improvement among themselves. During the PD session in late March 2013, the team observed practices and focused on training to enable sustainability of best practices being taught and adopted. PLCs are intended to further support on-going sustainability. That said, it was clear that sustainability is a critical risk without an instructional leader present on the ground on a daily basis. In addition, the TFI team initiated groundwork for teacher led Student Advisories, focusing less on classroom best practices and more on the needs of the whole child. Because of the student demonstrations and the lack of availability of certain books and kits due to procurement issues with customs, the TFI team remained flexible and adjusted significantly the pre-planned, week long, PD, focusing on the teachers and providing them with a platform to feel safe, thereby, enabling them to raise concerns so that improvements could be made.
- English Proficiency** – STEM school curriculum uses a trans-disciplinary approach to enhance students’ abilities to use project-based learning to address real-world issues that affect their family, their community and their world. These English-medium schools provide all content in English, preparing students with the knowledge and skills required to enter top-notch universities upon graduation. A challenge that emerged early in ECASE STEM school implementation was the lack of English skills among both teachers and students. Many teachers, excellent educators in their area of discipline, do not have the command of English required to deliver content in English and to guide students in understanding English-medium textbooks and resource materials. Students also struggle with the English language skills required to comprehend academic texts, carry out research, write academic papers and reports, to take part in discussions in which theories are analyzed, and to deliver academic presentations in the language. To meet the demand for rapid English proficiency improvement, and to help students and teachers gain confidence in using English for their STEM studies, World Learning developed an after-school English language proficiency program for students and teachers.



During this quarter, World Learning carried out a rapid needs assessment of teacher and student English language needs, developed an English language curriculum to meet those needs, and began implementation of the ECASE English Language Program (ELP). English Proficiency report is attached in **Annex (A)**

- **Fab Lab** - Procurement of Fab Lab equipment was competitively bid this quarter. World Learning released the RFP on February 14, 2013 and bids were submitted, reviewed and awarded in late March, 2013. During that time, most of the work to prepare for TIES installation support, training, and implementation of Fab Labs in Egypt was in a holding pattern awaiting the vendor announcement. Since award, Fab Foundation has signed necessary paper work to initiate the purchase and installation of equipment. During the quarter, meetings were held with Fab Foundation to work on equipment procurement, installation and training timelines and protocols. TIES, the Fab Foundation and WL worked together to assess the existing STEM school equipment, determine room and building specs and identify the persons most interested in working with the Fab Lab installation and training teams.

Also, a pre-implementation software-training schedule was created and discussed with World Learning. As part of this training, a small group of girls at Ma'adi and a small group of boys at 6th of October are meeting afterschool to begin Learning Sketchup, a 3D design software that is used in Fab Labs. They are using this software first to develop 3D models of the Fab Lab Spaces which will then be sent to Fab Lab Core team. These models will then be used by both the students and the core team to collaborate on the Fab Lab layout design. In addition to this work with sketch-up software, TIES is working with the Fab Foundation to develop a training plan for Fab Lab Egypt to conduct some pre-installation software training with a small group of students. This training will be coordinated with the PD that will be conducted this summer and connected to capstone project development concepts. Fab Lab Egypt has submitted a preliminary proposal for this training and TIES and the Fab Foundation are currently vetting it.

In further support of Fab Lab creation, TIES sent a representative to Seattle to meet with United States Fab Lab Network Community (USFLN) and its partners to research Fab Lab capstone projects, sustainability methods, leveraging public private partnerships and use of technology that can be leveraged in Egypt. The consultant also attended NEGMA's Impact Egypt! conference at MIT to meet Egyptians with innovative ideas for social and economic impact on Egypt. The venue provided an opportunity to research connections for public and private partnerships for the ECASE STEM network.

In addition, TIES and WL have been in contact with Dina El-Zanfaly, Hisham Khodeir and Aser Nabil, all of Fab Lab Egypt, to discuss their involvement in the training process. Fab Foundation sent Fab Lab Egypt an in-kind gift of \$20,000 worth of electronics equipment and paid for two of Fab Lab Egypt staff to attend Fab Academy this semester. The class required a certain amount of electronics equipment that Fab Lab Egypt did not currently possess. The materials and equipment were donated so that two members of Fab Lab Egypt could both matriculate in Fab Academy to develop the skills to be in sync with the international Fab Lab network. By participating in Fab Academy, the two gurus could then support the ECASE project specifically and become the future installation and training resource for Egypt and the Mena Region. Fab Lab Egypt will thus become a contributing member of the Fab Lab installation and training team. As was addressed earlier, TIES and the Fab Foundation are working together on a framework with Fab Lab Egypt that will allow them to provide training to a few students and teachers this spring that is

complementary to and coordinated with the capstone curriculum being developed for the schools.

In the next quarter, the Director of Fab Foundation plans to travel to Egypt in May to personally complete a site assessment of both schools, meet with World Learning Cairo, the GAEB, Fab Lab Egypt and take time to procure local materials. This visit is necessary to lay the groundwork for an efficient install and training period and to mitigate any safety issues that may exist. The Fab Lab Installation Team will arrive in late August to install both labs alongside Fab Lab Egypt, two Egyptian teachers from each school, two students from each school, and a TIES team member. Initial training with a set of teachers and students from both schools will occur immediately following the installation in mid-September and will be conducted by a training team headed by Fab Foundation and TIES and partnered with Fab Lab Egypt.

- ***Design Studio*** - Design Studio I, Innovation by Design was conducted while in Mansoura and with the Mansoura Design Team in January of 2013. The school features, the mission and vision of the school as well as community assets as they align with the design principals of the Egyptian STEM Model schools were gathered as a result of Design Studio I.

Design Studio II, Learning and Leading By Design, was conducted at the three-day workshop in Cairo with the Mansoura Design team in March 2013. At Design Studio II, the team toured the Cairo STEM Schools, went through the MOE Decree for STEM Schools (389) and began the process of creating the school calendar, school systems including daily operation, school governance and more. The Mansoura Team left Design Studio II with a list to do and to debrief with their Governor. Next steps include the completion of Design Studio II while they are in the USA in May and Design Studio III, Collaboration By Design the end of May 2013 when TIES is in Mansoura. A further extension of the second Design Studio is planned as the design team engages with both MC2 and SLA STEM Schools in Cleveland and Philadelphia. Because of the continuous interruptions due to the Ma'adi Girls sit-in and other demands on the TIES team, the integrated STEM curriculum 1.0 was not introduced to the Mansoura Team but will be when they are in the USA. They all participated in the Grand Challenges Design Studio in January 2013 and are well aware of the goals of the integrated curriculum. Outcomes of design studios will help the ECASE team understand the specific needs of each school so that they can be customized, supporting school design, layouts, and procurement of equipment.

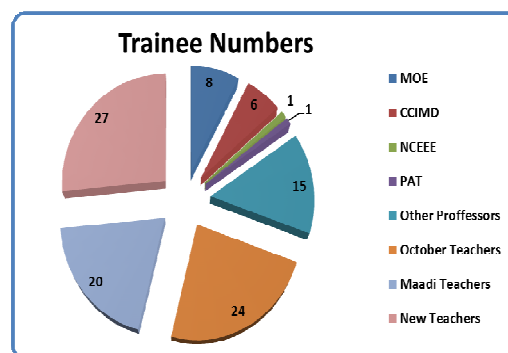
During the most recent visit to Egypt in March 2013, and after work in the Design Studios, TIES was able to work with World Learning to create a partnership with National Instruments to procure LabView Software and other supports to provide enhanced experiential learning of the students, supporting curriculum, capstones, and Fab Lab projects. Ultimately, the Design process will yield an Egyptian STM School Blueprint, highlighting the key STEM elements required of STEM schools (**part of Activity 3.4**), supporting overall expansion and replication of the STEM model across Egypt.

While the STEM School Design Manual was created to define the overall school design work/process, the Blueprint will dictate the final overall design of Egyptian



STEM schools. The Blueprint, tied specifically to Ministerial Decrees, includes an innovative approach to the design and lays out specific benchmarks and innovation indicators required by all Egyptian STEM Schools. The Blueprint will portray the outcome of the STEM School, but will also link to all of the various tools, methods, and templates created by the ECASE team to facilitate the overall STEM School Design and Implementation. Items connected to the Blueprint will include the process for Design Studios, Capstones, Curriculum Development, Professional Development, and other key aspects formalizing a STEM School. In addition, the Blueprint will dictate the need for an Egyptian STEM School Yearly Action Plan such that each school will remain focused on the overall design Blueprint of the school. TIES will create this overall Action Plan Framework in Q3.

- **Training** – Starting from this quarter ECASE project began to compile all training data from the beginning of the project up to date because it will help in our PMP reporting. ECASE project hold 17 events for total number of trainees 102. Target groups are;
  1. Ministry Of Education
  2. Center of Curriculum and Instructional Materials Development
  3. National Center for Examination and Education Evaluation (NCEEE)
  4. Professional Academy for Teachers (PAT)
  5. Professors from different universities
  6. October Teachers
  7. Ma'adi Teachers
  8. New teachers



**Annex (B)** with detail training data starting from the beginning of the project.

## **2. Activities leading towards accomplishment of Program objectives**

### **2.1 *Project Management***

During the Jan 1 – March 31 2013 quarter, the ECASE team began creation of team protocols, creating an overall protocol format, and the drafting of key protocols for cost accounting, branding, procurement, and communications. Protocols will continue to evolve and be enhanced as the project unfolds and new requirements are needed.

In addition, the team launched a new tool for overall management support of the project called “SmartSheets”. This tool offers a collaborative workspace with “spreadsheet” like content, allowing for shared content, including task lists, calendars, Gantt charts, and supporting documents. As this tool is being beta tested among the team, further protocols, best practices and training will be made available to all project stakeholders. Current content captured in Smartsheets includes US team travel schedules and agendas, contact information, PPP information, AIP schedule, and a Fab Lab Deployment Schedule.

In addition to these infrastructural supports, the ECASE team launched a lessons learned survey among the ECASE project team to uncover operational needs to support the project. The results of the survey yielded several best practices and areas for improvement. The following recommendations are being discussed as a result of that survey which was offered to every project staff member from TIES, TFI, and 21PSTEM.

The survey resulted in documentation of the following success areas:

1. Schedule full team meetings at a frequency that most effectively interacts with the work to be done on the ECASE project. These meetings will be face-to-face and will enable collaborative working opportunities, time for Q&A, and networking across the team and organizations.
2. Hold regular organization meetings at 21PSTEM, TFI, and TIES to maintain focus on contracted work and to further refine roles and responsibilities.
3. Broadly adopt ECASE project team design principles to be considered and adhered to by all.
4. Broadly adopt ECASE Email Etiquette to be considered and adhered to by all.
5. Leverage action teams to enable more collaborative discussion for interfacing work in between large team meetings.
6. Select a standard virtual meeting platform and train all team members on its use.
7. Establish best practice protocols for virtual meetings.
8. Require all team members establish a Skype account and add their Skype name to the team roster (posted in Smartsheets). Skype will be used for instant messaging and as a “virtual watercooler” by the team. All team members will try to remain logged in when they are at their computers.
9. Further discuss the need to create a virtual team presence to enhance communication, transparency, and information sharing - with some of the following capabilities:
  - a. Content management and structuring (folders) for easy navigation and content grouping
  - b. Search functionality to easily find items
  - c. Space for management and reduced permissions, but err on side of transparency

- d. Social networking, including background information and pictures of all project staff to increase empathy and teamwork
- e. Blog or microblog capability for mass communication to entire team and logging of decisions
- f. Plan to post ALL content here, including meeting minutes, protocols, templates, decisions, work in process, and final deliverables

This tool will be selected to replace or enhance basecamp.

- 10. Provide training on virtual meetings, smartsheets, and content management/collaboration tool.
- 11. Define key roles and responsibilities tied to the AIP. Work with designees to further plan the work, assign tasks, and do reporting. Maintain in smartsheets.
- 12. Implement protocols or trainings to get better feedback from work being done on the ground in Egypt.

## **2.2 Project Activities**

This section summarizes key accomplishments against the AIP for each objective area. All project activities are a part of a larger iterative process and many aspects of individual activities overlap with other activities. The summary below is presented according to the AIP framework for ease of monitoring and reference against the implementation plan.

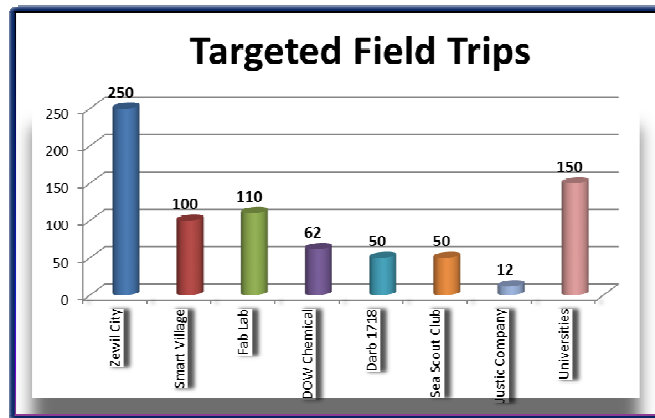
### **Objective 1: Increase student interest, participation, and achievement in science and mathematics with a special effort to underrepresented groups such as girls and economically marginalized students**

During this quarter, TFI worked to refine the specifics for implementing a **student admission system to the STEM school that is transparent, inclusive, and criteria-based (Activity 1.1)**. While draft admissions criteria have been submitted for review, the TFI team is working to modify the Science Leadership Academy and other US STEM School models to the Egyptian context and the timing and capacity constraints around implementation of the admissions system process for each school. As the process is being developed, TFI is considering the geographical reach for each school, the existing admissions systems for middle school, the anticipated number of applicants, and the MOE support capacity for interviewing. The final student admissions criteria document will have to be reconciled with current protocol as articulated in the MOE Decree. The TFI team will refine the schedule for the next quarter to assure the conduct of a ½ day workshop with MOE around development of the general selection criteria guidelines. Timing for the workshop with the administrators and stakeholders needs to be determined so that it will support admission in time for school opening in September.

**In an effort to promote the STEM school within the surrounding community (Activity 1.2)**, TIES has undergone developmental work in preparation for meetings with BOTs from both Ma'adi and 6<sup>th</sup> of October. While the overall process has been delayed, the meetings for BOT engagement are scheduled during the first week of Q3. TIES also obtained a translated copy of an early version of the Decree around BOTs, and restructured the content for discussion with BOTs around this. While planning to focus on the BOTs role in the STEM schools was intended, as of March 31, it became apparent that the BOT work would need to remain flexible to address the key issues being discussed at demonstrations of both schools.

In addition, the TIES team originally planned to hold workshops to tailor a STEM School Advokit to Egyptian needs. An Advokit acts as a playbook for regional grassroots advocacy stakeholders – including and enabling outreach objectives/actions, goals, strategies, key messages, and consistency of voice. Due to country instability, especially in Mansoura where travel of the ECASE team was prohibited, this approach was delayed and is undergoing a new plan, tied to public private partnerships and advocacy. At this time, TIES will work through various Design Studios to enable key regional stakeholders to support public outreach and to own that process for their schools. A specific Advokit will be created, focusing on creation of case statements for the schools in an effort to support and teach fundraising. TIES will collaborate with World Learning on this endeavor and relate it to the work of the public private partnerships. Finally, a specific Fab Lab workshop for parents and the community is being planned for early September with the opening of schools and the launch of the Fab Labs in Cairo at Ma’adi and 6<sup>th</sup> October.

As January was mid-year vacation, during Feb. and March ECASE project facilitate 19 trips for October and Ma’adi Schools to 8 different places with total no. of 784 students. **Annex (C)** included detailed table for targeted field trips by October and Ma’adi to different locations.



During this quarter World Learning continue to **prepare students for the rigors of STEM education and Leadership roles (Activity 1.3)**. World Learning carried out a rapid needs assessment of student English language needs, developed an English language curriculum to meet those needs, and begin implementation of the ECASE English Language Program (ELP). Annex (A) included English proficiency detailed report.

## **Objective 2: Strengthen the STEM school local initiative through developing an effective model of specialized high school focusing on science and math for gifted students**

The team has delayed work to **tailor the STEM school to the surrounding community through school specializations (Activity 2.1)** over the past two quarters due to leadership changes and adjustments in the schools and the need to focus on internally on school management concerns. Now that there has been some time for these issues to settle TIES and the PPP coordinator will work to determine the expectations of the community mapping tools and school specialization frameworks.

As discussed in the previous Q1 report, surveys were fully administered to 6<sup>th</sup> of October and Ma’adi School teachers in support of **providing essential educational infrastructure to support experiential classroom activities (Activity 2.2)**. All school officials have the results of the survey for their use and the survey will be re-administered at the end of the 2012-2013 school year, enabling on-going improvements and collection of M&E data. In general, within the Cairo schools, the survey was part of the overall design process being

implemented by TIES. With the startup of new schools in Mansoura, planned to open in September 2013, and Alexandria, opening date to be determined, TIES will be able to leverage the full design process with the community stakeholders for each school. This will allow for the full utilization of design studios and design processes, to further support the layout and conduct of each school. For instance, TIES has already conducted 2 design studios with Mansoura, focusing on their new school that is slated to open September 2013.

In further support to provide essential educational infrastructure to support experiential classroom activities World learning led this activity by holding a small training session for some students in October school to prepare an inventory for existing materials and equipment in 6<sup>th</sup> October school to assess needs for additional essential infrastructure. As a result of the demonstrations, the work is still on going and the inventory list is attached up to date. During Q3 WL expected to complete this inventory and discuss the results with school officials and MOE. **Annex (D)**

World Learning has completed the procurement phase for the materials needed to install FabLabs at 6 Oct and Ma'adi. By and large, the bid from MIT's Fab Foundation was found to meet the needs of the school with a portion of the materials and computers scheduled for local purchase in order to minimize cost where appropriate. **Annex (E)** Bill of quantities for all procurements.

On October 18th, ECASE's IT consultant met with the IT specialists at both STEM schools; Engineer Mohamed Nasharty at the 6th of October school and Engineer Mohamed Ahmed at the Ma'adi school to understand the nature of their current connectivity and assess the bandwidth required for each schools. Vodafone is providing the 6th of October school with a 5MB/sec bandwidth connection gratis through a Wireless/Microwave technology that is not sufficient for currently 300 students plus 15 teachers and administrators. The Ma'adi school presently has three VSAT shared connections that provide 256KB/sec bandwidth each for 150 students plus 15 teachers and administrators. Although 6th of October is much better than Ma'adi, both schools are struggling with their current connectivity which is deemed inadequate for a regular school, let alone a STEM school that relies on its students accessing the internet as a main source for their educational research. In both schools students and teachers alike rely on USB modems/air cards to connect to the internet, but due to the remoteness of both schools, 3G connection is spotty and often unreliable. It was assessed, based on the discussions with the two IT specialists, the number of students expected in each school and the type of work needed from the students that a bandwidth of 20MB/sec will accommodate each school for its current and future needs when all students are enrolled.

### **Internet implementation on October School**

It was found out that the Wi-Fi is the most convenient connection type for schools internet since we will use the wireless communications for a few kilometers (about five to seven kilometers) to reach to an exchange, then we'll join the Fiber Optics- ground network- to connect to TEDATA our ISP. Wi-Max will communicate wirelessly only from one tower to the other until reaching the ISP location. Moving wirelessly through towers might delay, corrupt or lose data especially when those towers are heavily loaded.



The hardware and all equipment required for service were installed at October School and the Internet service started with 20MB on March 14, 2013.

The Wi-Fi internet service is running steady and the 20MB bandwidth made a great difference for all internet users at school.

### **Internet implementation on Ma’adi School**

Ma’adi school location is different than October School. Ma’adi School is surround by high buildings prevent the “Sight of Contact “with any near or far exchange which is essential for Wi-Fi to communicate . The only solution that can be applied here is Wi-Max . We had a connection with one of “Etisalat” -our service provider- towers. Yet because that tower is loaded we manage to get 10MB Internet bandwidth for the first month then we will be connected through a new tower they are building to get our 20MB bandwidth.



In addition World Learning will continue to provide IT infrastructure and support in schools as follows:

**October School** A meeting with Cisco Representative at October School to demonstrated the capabilities of Cisco routers, Cisco high capacity switches and manageable Cisco access points. During this meeting a discussion about the LAN required to connect the Lap’s, dormitory and the main school building. Finally after discussion, it was decided that the three buildings have to be connected through “Fiber Optics Cables” since the distances between the three buildings exceeded 100M. During next quarter the project will proceed in fiber optics and LAN installation. ECASE project also provide October school with 2 servers Dell T110.

**Ma’adi School** A meeting with “Fortinet” Representatives at Ma’adi school to demonstrate the capabilities of “fortinet” models for Web Filtering, Bandwidth management and Firewall. It was agreed that “Fortinet” is technically quite suitable for Schools internet management and the cost is effective.

ECASE project provided Ma’adi School with two Cat6A network cables (100 meter each) supporting 10 GB Ethernet to connect dormitory and the main school building. The project is in the process of tendering LAN infrastructure. Now offers from different vendors for about 32 network points and also some electrical outlets.

During Q2, TIES and World Learning have collaborated to **create sustainable and mutually-beneficial Public Private Partnerships (Activity 2.3)**, including the implementation of a customer relationship management tool (database) for use by the collective organizations. This tool (part of Smartsheets) will allow the team to easily document interactions with potential PPPs and to capture and follow-up on action items and next steps. In addition, TIES and World Learning have scheduled a regular calls to touch base on progress and to make sure the team is heavily integrated on overall objectives with each potential PPP, as these will play a strong role in sustainability of the work underway. The following list describes summary actions taken with a subset of the key organizations on our outreach list with a description of key interactions the last quarter and organizational



roles in building the PPP.

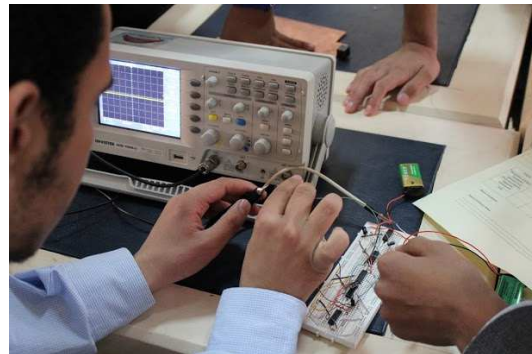
- *AUC*: TIES met with Ted Pruinton, Associate Dean at the School of Education at AUC. The meeting was informal and held at the Sofitel. Due to the unproductive nature of the discussion, the ECASE team has decided to leave all AUC communication to Dr. Reda and Dr. Amr.
- *Broadcom*: A call is established for May 2013.
- *Cisco*: They are offering to provide extensive Cisco Academy training to teachers who are willing and excited to attend. The thought is that teachers will support direct school and after school work with the students in the two Cairo schools, then enable expansion to all STM Model Schools in Egypt.
- *C.O.R.D*: TIES met with C.O.R.D, but no additional action is expected at this time.
- *Dow Chemical*: They continue to show promise as a partner and further discussion will provide additional scoping details.

*ExxonMobil*: TIES has a call with them to talk about potential support for the UTEACH program being offered in Egypt to the universities that have schools of education (public).

- *IBM*: TIES and World Learning met with IBM and established a series of next steps. Please see the meeting notes. This will prove to be a robust partnership.
- *Ideas Gym*: They have met with TIES and World Learning and prototyped a demonstration for students at 6<sup>th</sup> of October. It is clear that they should be a partner but next steps have not been determined to date.



- *Intel*: TIES and World Learning have both reached out to INTEL to secure the process for schools and students to participate in the ISEF competition. To date, Mansoura has 25 semi-finalists and sent one to the finalist session in USA. World Learning will continue to work to secure the details.
- *National Instruments*: TIES and World Learning met with National Instruments and determined the procurement for both Cairo schools to enable LabView and associated electronic capability for both schools. NI will provide four years of professional development and assign two engineers to the schools. Emphasis was placed on the need for science to prevail in the experimentation and not just engineering.
- *Fab Lab Egypt*: They continue to be fabulous partners enabling teachers and students to fully understand the capability of Fab prior to the school-based Labs being installed.



- *Samsung:* World Learning and TIES met with Samsung to determine the nature of their support and product development for the schools. They have the potential of providing interactive hardware and software to support the Integrated STEM Curriculum 1.0 for the Egyptian STEM Model Schools. World Learning will pursue next steps.
- *Teach for Egypt:* TIES has met with them and needs to set up another meeting to determine their strength as a new NGO and whether they have any teachers to offer to the schools for recruitment.

Several additional companies have additional conversations pending, including, but not limited to: Alcoa, Carrier, Future Group, International Book Bank, Merck Pharma, Nestle, Qiditi, Texas Instruments, and Vodafone.

In Q2, TFI developed **extracurricular activities that complement classroom content and school specializations (Activity 2.4)** based on three primary elements – 1) Extracurricular Intellectual Property Innovation Center (EiPIC), 2) Discovering Science:

Traveling Science Shows for information education (**Activity 1.4**), and 3) eSTEM Video Production – a student video library. Because of school strikes in March 2013, TFI was unable to present the extracurricular programs. TFI is evaluating the feasibility of conducting another visit before schools ends, but such a visit will have to be balance with on-going issues in the schools, and end of year activities such



as capstone presentation and final exams which occur in mid May 2013. While it is intended that the formal program will be launched in late summer or early September, 2013, students will be able to add invention ideas to an activated website to capture their input. During the next quarter, TFI will finalize the body of scientists, intellectual property experts, educators, and media technicians who will facilitate these programs at the Egyptian STEM schools.

**Objective 3: Build the capacity of a highly qualified cadre of STEM professionals and provide opportunities for training and sustained, intellectually rigorous professional learning**

In efforts to **adapt teacher and administrator performance standards for the STEM school context (Activity 3.1)**, **assess progress through classroom observations (Activity 3.3)**, and **building school principals' ability to develop and implement strategic STEM action planning frameworks (Activity 3.4)**, 21PSTEM created ECASE Observation Protocol and Using the ECASE Observation Protocol documents in February, 2013. The observation instrument was the first in a series of instruments that will lead to a final document to be used by administrators for classroom observation and teacher evaluation. Prior to the writing of these documents, 21PSTEM did a literature review of five of the most researched classroom observations documents in use today, including: 1) RATE- Rapid Assessment of Teacher Effectiveness, 2) MET- Measures of Effective Teaching Project, 3) RTOP-Reformed Teaching Observation Protocol, 4) Danielson, and 5) STEM COP-STEM



Classroom Observation Protocol. These documents were analyzed and charted into a matrix of research-based practices for PD.

The PD offered the week of March 17, 2013 included topics relevant to classroom observation: Classroom Observation and Reflective Instructional Practices, Scrip-taping and elements of Effective Instruction, Post-conferencing –Four Option design, and Models of Evaluation. With respect to administrator performance, a similar document listing effective practices is being researched and developed. Based on the most recent visit to Cairo in late March, 2013the ECASE team determined the need for the creation of three new documents moving forward: 1) Classroom Observation Instrument (to replace the ECASE Observation Protocol) asap, 2) End of Year Evaluation Instrument for Teachers by May, 2013and 3) End of Year Evaluation Instrument for Principals by May 2013. During the next quarter, 21PSTEM will finalize these documents and work with staff on the ground to assure training and practicing of observation and conferencing skills. **Annex (F)** is Observation protocol instrument

During this quarter, World Learning carried out a rapid needs assessment of teacher English language needs, developed an English language curriculum to meet those needs, and begin implementation of the ECASE English Language Program (ELP). Annex 5 included English proficiency detailed report.

The TFI team did development sessions in Cairo to **build teacher capacity to effectively implement STEM curriculum in the classroom (Activity 3.2)** from February 3-7 and March 24-28, 2013. Key components of the workshops were to re-familiarize the Egyptian teachers with the *Understanding by Design* (UbD) framework and to help them implement Inquiry and Project-Based Learning into their existing classes and future units. Teachers were led through the process of evaluating what they had previously done in order to identify areas of improvement. In addition, most teachers developed two completed plans in the UbD framework for units that they were about to teach this spring. The team supported the teachers from Ma’adi and 6<sup>th</sup> of October by presenting standard practices to the whole group and working extensively with teachers both directly and in subject area partnerships across schools. Team-building was a focus of each session as Ma’adi and 6<sup>th</sup> of October teachers had not met each other before. By the end of the week it was clear that teachers from each school were going to use each other as resources and would continue to collaborate on curriculum development and classroom practices.

At this point, the focus of the **best practices in STEM Pedagogy and Technology** has been on the professional development of the teachers and administrators. This quarter there were two weeks of pedagogy training planned for February and March 2013. February training focused on having the teachers think about what was important for them to teach and what the day-to-day classes should look like to achieve those goals. Training built upon previous workshops focused on Transfer, Enduring Understandings and, Essential Questions, the drivers of day-to-day teaching, by engaging more deeply to transfer learnings into the classroom. There was also a large emphasis on defining ‘good evidence’ of learning. Each teacher was able to walk away with at least one project, which they could do that was driven by what the students needed to learn. In addition to these sessions, there was a large emphasis on getting the teachers to form Professional Learning Communities (PLC’s). In previous trainings there had been work in PLC’s, but at this training there was meta-discussion about how to form, adapt, and use PLC’s to improve their practice. The TFI team then walked the teachers through how to use many of the resources that are now available to the Egyptian teachers. At the end, an exercise was completed to enable the teachers to distil and organize

all of the information and systems they have been told about (e.g. grand challenges, transfer, capstone) into a cohesive manner. Many teachers said this was an incredibly valuable exercise for them, not only as a practical manner, but also as a meta exercise on how to approach their teaching.

An excellent artifact of the building of capacity and improvement of the teachers is the Capstone scope and sequence they were able to develop in February, 2013. The 6th of October teachers independently decided to develop a scope and sequence scaffolding the skills and processes needed for the students to work on the capstones with which they had been presented. The document itself was a good exhibition of their learning, but the processes used were even better. They had analyzed the long-term leanings incorporated in the capstones and collaboratively figured out the skills needed for their students to learn the big ideas in the capstones. The collaboration, a key understanding of their PLC's, was the most important part of the exercise. They demonstrated that they were able to apply many of the skills they were learning in the PD workshops and build the capacity to use themselves as resources for improvement.

Some of the planned PD in March 2013 was intended to focus on content in the interim curriculum materials. However, these materials remain unavailable to schools due to a hold up in customs. Because of this schedule delay and the strikes within the schools, the TFI team needed to adjust their planned activities in March. The team focused more on understanding the point of view, issues, and concerns of teachers and then worked with them to initiate a process of building student advisories so that they could also create greater awareness of student issues and maintains lines of open communication. In addition, the need for a consistent and sustained professional development capacity in country will be essential to ensuring a continuum of growth for the teachers. World Learning and partners are currently looking at solutions to for on-the-ground sustainability.

Moving into the next quarter, the PD team, led by TFI, will focus on developing common language between curriculum and pedagogy. The Summer Institute will be fully planned and will undergo preliminary roll-out. The team will also show progress in obtaining a site license of udbexchange.

In mid-January 2013, 21PSTEM worked with teachers to provide training focused on **formative classroom assessment techniques**, including know-how to write effective feedback to students, practical techniques that require students to think about feedback, peer- and self-assessment strategies to promote students as resources for feedback to other students, understanding the limitations of and options for traditional grading and recordkeeping systems, and what PARLO is as a system of recordkeeping. In general, the workshop was well received. Evaluations remarked on how well organized it was and how much they had learned. Teachers felt comfortable starting to use these techniques and were interested in learning more. That said, it is difficult to know what teachers really understand as the English is translated in Arabic and as they try to understand the English. The ECASE team uses educational terms like “Learning Outcomes” which need to be very clearly defined. One participant’s understanding of the term was “assignments” for students.

In order to understand the effectiveness of professional development workshops, the ECASE team recommends someone be present in schools to lead weekly Bi-weekly Learning Community sessions. These sessions would last about two hours and would consist of teachers talking about their lessons and what they were trying to do differently as the result of the PD. One hour would be spent discussing successes and failures with teachers and helping

to problem-solve with one another and the next hour would focus either on something new or on something that has been problematic for the group. There should be 6-8 members in the group and they should meet at an appropriate and feasible frequency. The results of these meetings could then inform the ECASE team on areas of focus for on-going PD.

During the workshops over the past year to **identify and build the capacity of teacher trainers (Activity 3.5)**, the teachers are usually collaboratively working to improve their practice. It became apparent who the teacher leaders are, which of the colleagues the others naturally gravitate towards. We are trying to balance those tendencies with also recognizing the strengths of some of the less extroverted teachers. There has been some ‘turn-around’ training supervised by the TFI PD team and there is much more planned for the future. There are developing tiers within the workshops, with some of the more experienced teachers starting to outpace their colleagues. Some of the newer teachers are also very quickly showing their skills in great ways. At this point there have only been a handful of PD sessions with the Egyptians taking lead (with large amounts of planning and oversight by the PD Team), but there are a lot more planned for the future. The outline of the Summer Institute includes having the identified Teacher Trainers leading many of the introductory sessions for the new teachers. In developing those sessions the Teacher Trainers will have to evaluate their practice and distil what they have found to be most effective for the new teachers and will develop great pedagogical advancements for both sets of teachers.

To support **creation of a virtual STEM professional learning platform (Activity 3.6)**, selection of a learning platform technology should consider the full scope of needs for learning and translation of best practices across the network of Egyptian STEM schools and long-term sustainability. As such, an adopted platform can become a social network for teachers, students, parents, and extracurricular partners/mentors. That said, TIES, in conjunction with World Learning, has formalized the action team and recommends a replanning/broadening of this objective to develop a full suite of requirements for a Virtual Learning Platform, that considers the areas of 1) Curriculum, 2) Professional Development, 3) Fab Labs, 4) Extra-curricular programming, 5) School Schedule, 6) PARLO (the Mastery Proficiency Software), and 7) an e-portfolio for students and capstone projects. It is expected that this overall work will be carried out in 6 Phases, as follows, with a rolling implantation, based on the requirements collected. A more detailed plan and schedule will be created in Q3.

- Phase 0: Development of the “As-Is” state of technology for Egyptian students
- Phase 1: Discovery & Background research, knowledge management, document – including a review of materials and discussion via the technology action team to create a set of baseline requirements and assumptions.
- Phase 2: Project Scheduling – based on the requirements of Phase 1, and will include the plan for the following phases:
- Phase 3: System Selection
- Phase 4: System Implementation and Support
- Phase 5: Training and Sustainability Guidance

In the next quarter, the TIES team will work with the Technology Action team to uncover the priority needs for the schools and determine an phased implementation plan with initial platform availability becoming available in September.

Finally, the ECASE team is working to provide opportunities for Egyptians to **experience best practices in STEM through Interactive US Study Tours (Activity 3.7)**. The entire

partnership is working collaboratively to plan a US STEM Tour for Mansoura representatives, including MOE and GAEB participants, to visit STEM schools in the US May 4-12, 2013. During this visit, the Egyptian visitors will have the opportunity to tour STEM schools including MC2 in Cleveland and SLA in Philadelphia. During these visits, they will experience differences among STEM schools and have the opportunity to experience student interaction with capstones and fab labs. Throughout the visit, TIES will work with the team to refine the current Design Studio work and to refine the objectives and timeline for the Mansoura STEM school. The agenda has been drafted and will be finalized with the briefing materials and workbooks in early Q3.

**Objective 4: Strengthen MOE capacity at the systems and policy level to sustain and replicate STEM model schools**

21PSTEM has been working to **design school-driven curricula (Activity 4.1)**. According to the Curriculum Framework developed by 21PSTEM in the summer of 2012, the curriculum encompasses all aspects of the school experience for the students, supports attainment of the school goals, and exemplifies the school principles all articulated in various documents of the summer of 2012. The curriculum can be divided into three phases: what is currently being taught, what is envisioned as the integrated curriculum (Integrated Curriculum 1.0), and the bridge to get students and teachers from the current status to the envisioned status. This quarter the following activities have been undertaken as they related to the predefined capstone (TIES and curriculum (21PSTEM) design processes:

What is currently being taught:

- Systems capstone design was completed and is being implemented at Ma'adi (21PSTEM).
- Communication capstone design was completed and is being implemented in grades 1 & 2 at 6<sup>th</sup> of October (21PSTEM).
- Books and supplies were selected, (21PSTEM with concurrence of others) purchased and delivered (WL) to both schools for biology, chemistry and physics. Units were selected that would support the capstones in each school and would build on previous units. Initial training in these curricula was provided (21PSTEM) and more support for teachers in these curricula is being planned this spring (TFI).
- Mathematics units were written to support the capstone projects and to interface and support the national curriculum (21PSTEM). Initial training and support has been provided in these units. (21PSTEM)



What is envisioned as the integrated curriculum (Integrated Curriculum 1.0):

- A three day Grand Challenge Design Studio (GCDS) was conducted (21PSTEM) in January 26-28, 2013 in Cairo that brought together approximately 60 STEM teachers, faculty and MOE officials to identify and discuss the knowledge and skills needed by

advanced high school students for higher education studies that would give them the tools to address Egypt's Grand Challenges.

- GCDS data was organized and synthesized by (21PSTEM), major themes were identified with their linkages to the Grand Challenges.
- A proposed three-year scope and sequence was drafted by (21PSTEM) and presented to a variety of Egyptian stakeholders in a series of meetings held in Cairo in late March/ early April 2013. These stakeholders included:
  - the MOE curriculum office MOE
  - the National STEM Board
  - Technical Curriculum Writing Committee (see the Curriculum Framework)
  - The teachers and students at both 6 October and Ma'adi schools

Activities next quarter In the 3<sup>rd</sup> quarter (April 1 – June 30, 2013) 21PSTEM and the and the Technical Curriculum Writing Committee will produce the following:

- Analysis of Design Review Data (21PSTEM)
- Complete 3 year scope and sequence for all science and mathematics courses, keyed to the Egyptian Grand Challenges, designed in a semester format and including two tracks for the third year.
- Descriptions of integrated, semester-long capstones, linked to the Grand Challenges, to complement the science themes for each semester
- Suggested activities and materials to support all aspects of the curriculum.
- Transition curriculum, activities and materials from the current curriculum to the Integrated Curriculum 1.0 for the first semester of grades 2 and 3.

The following will be done by TFI and TIES in cooperation with 21PSTEM:

- Development of plan for teacher training in the curriculum (21PSTEM – TFI)
- Completion of capstone development handbook (TIES)
- Completion of skeletal plans for at least 3 more capstones (TIES)
- Completion of plans to review/revise existing capstones (TIES-21PSTEM)

**To develop comprehensive assessment instruments aligned to STEM curriculum (Activity 4.2)**, Subtask 4.2.1 was largely complete by 21PSTEM at the end of December, 2012. 21PSTEM administered the baseline assessments to inform curriculum development.

All other tasks are fit together into an overall effort to develop a formative and summative assessment system for the STEM schools. The international comparison of high school exit/college entrance exams (4.2.5.1) was incorporated into a report in early January, 2013 recommending a long-term approach and a short-term approach to high school exit/college-readiness assessment (4.2.4). This plan continues to evolve through discussions with the National STEM Board The end-of-course tests (4.2.2), when they are developed, will be incorporated into the data used to assess readiness for high school exit and college readiness.

21PSTEM prepared draft recommendations for investigating the language effects of the ACT, discussing these ideas informally with WL –Cairo office. Because the final recommendations will depend on MOE decisions to be reflected in a forthcoming decree, the

draft plan has not been circulated. In addition, 21PSTEM participated in the discussion of the EDPSR rubric (discussed further below) for engineering proficiency assessment that is being developed for Advanced Placement Engineering certification by the College Board. 21PSTEM will work with TIES to investigate incorporation of the rubric into formative and summative evaluation planning.

In further efforts to support assessment work, on March 1, 2013 21PSTEM, WL and TIES met with Dr. Leigh Abts, of the University of Maryland, who has been focusing his efforts on ways to improve the engineering pipeline from K-12 to post-secondary for over a decade and was already working toward a means of reviewing the portfolio work of students. Project Lead the Way had an interest in building an online tool to support problem-solving efforts for all students, but lacked a national design process rubric to build into its system. Dr. Abts and his team had an interest in building a national rubric, but need a tool to put the rubric work in the hands of students and teachers. The strength of their “Innovation Portal” lies in the partnership and continued interaction of these two efforts. With Dr. Abts’ leadership, NSF funding was applied for and granted to develop and validate an assessment rubric for the engineering design process. In December of 2010 his team finalized their initial work in a document entitled the “Engineering Design Process Portfolio Scoring Rubric” or EDPPSR. That document is central focus of a three year university study to validate and refine the work into a reliable assessment tool for wide spread use in the engineering education community.

Essentially, EDPPSR is an assessment rubric with an engineering design. The intent of the EDPPSR is to offer a validated and reliable framework for a performance-based assessment of the engineering design process of use to educators, teachers, faculty, students, admission officers and program sponsors. The ultimate goal of the EDPPSR is to provide a means by which to evaluate and score a student’s participation in an engineering-based project, regardless of the setting – e.g., formal (classroom, curriculum-based) versus informal (extra-curricular). This process will be integrated with 21PSTEM PARLO to be adapted to the Egyptian Design Focused Learning Capstones.

Finally, a survey of Board charters among relevant US STEM schools was conducted to select candidate practices that were important for the Egypt STEM model schools in an effort to **build the capacity of the National STEM Board (Activity 4.3)**. An emphasis was placed on evaluating successful STEM school network methods and the associated governance principles that enabled those to occur. In particular, the approach used in the Ohio STEM Learning Network was especially relevant, since it began with the same number of schools (5) over a similar time period to the Egypt program. From this exploration, a charter package and training documentation was prepared that is designed to work with the National Board to create a network of STEM schools in Egypt. In addition, a companion training document for the Board of Trustees (parents) was also prepared, for use in training parents in a supportive role to the schools as they develop over the next few years. The training is expected to commence with an on-site meeting in early April 2013 led by TIES, and involving board members from the Cairo schools. However, school unrest is likely to impact the focus of these meetings.

In Quarter 3, 21PSTEM will participate in the April 11, 2013 conference to be held in Dubai by the Educational Research Center and assess the usefulness of their Math and Science tests in Arabic, as well as of the International Arab Baccalaureate.

In addition, the team will determine appropriate use of Likert scale survey of 21st Century

skills and revise to improve psychometric properties, and pilot the survey. To finalize an assessment approach, the team will implement plans for investigating the impact of language on ACT and develop a work-around if needed, and finalize and implement plans to measure readiness for high school exit/college entrance of 6 October students who are currently in Year 2.

In addition, 21PSTEM will initiate plans to score students on research/presentation, to be used as part of the high school exit/college readiness rubric and refine plans to use misconception inventories as part of the high school exit/college readiness rubric. Additionally, 21PSTEM will coordinate with TIES and TFI to ensure Capstone performance is reliable and valid (as it incorporates 25% of the overall high school exit/college readiness rubric), and will continue to evaluate the integration of an e-portfolio

In Q3, an overall e-portfolio will be selected and will be connected to and integrated with the work that 21PSTEM is doing with PARLO and create a wrap-around system to be used as an assessment tool for the capstone work in Egypt. Collectively, the team will determine the feasibility of the EDPPSR e-portfolio. Additionally, e-portfolios may be available in some existing technology platforms and will also be evaluated in comparison to EDPPSR. Therefore, the decision will be evaluated in close conjunction with the technology development platform. Dr. Abts will work with 21PSTEM over the next quarter to develop the tool. Ultimately, the goal is to enable Grade Two students with an e-portfolio so that they can provide the universities with a comprehensive look at their performance on Capstones, extra-curriculars, and all other work assessed.

**Objective 5: Support the MOE in the upgrading of science and mathematics curriculum standards, students assessment, and teacher preparation for the mainstream.**

In Q2, project staff at 21PSTEM trained members of the Egyptian Ministry of Education, as well as disciplinary faculty from Egyptian universities, to use the Surveys of Enacted Curriculum (SEC) to analyze assessments, textbooks, and standards and in efforts to **build capacity of CCIM and NCEE to apply Egyptian STEM best practices to mainstream science and math (Activity 5.2)**. Staff conducted a preliminary training on January 30 and 31 2013, where Egyptians were introduced to the SEC instrument, coding procedures, and analyses. On March 12-14, 2013 21PSTEM staff returned with John Smithson, one of the creators of the SEC instrument, to complete the training and to setup ongoing use of the instrument to inform educational practice related to the alignment of textbooks and standards and assessments. Participants included members of the Egyptian Ministry of Education, members of the Egyptian Curriculum Center for Instructional Materials Development, members of the Egyptian National Center for Examinations and Educational Evaluation, and disciplinary professors from local universities. This final training reinforced ideas that were learned earlier about the coding procedure as applied to assessments and expanded those procedures to be used with educational standards and textbooks. At this time, the SEC work is considered complete but MOE officials express interest in having John Smithson return for more training .

Proposed in Q3 The first 2-3 day summit to **capture best practices in STEM Education (Activity 5.1)** is being planned for October 2013. TIES is working to determine the criteria for identifying participants who display the most relevant best practices in STEM. This rubric has been posted to Smartsheets for overall team connectivity. The conference is

intended to include students and educators from Egypt and the states. Industry, supporting organizations and associations will also be invited. Best practice participants will be selected globally. Also, the intent of this initial Summit is to keep the focus and attendance small, collaboration high, but with the desire to grow the summit into a larger conference in future years.

During Q3, all of the logistical needs will be addressed before Ramadan. The team must determine the conference purpose and state clear intended outcomes that will inform the crafting of the agenda. Planning will involve vetting the criteria rubric and utilizing it to identify presenters and best practice attendees. Presenters will be determined based on the intended outcomes and rubric. TIES will work with WL to schedule the conference, location, sending save the dates and invitations. Since one of the days of the conference will be a student STEM symposium, it would be beneficial to identify student participant and projects to be addressed before the end of the school year as waiting until September to do this may not give the students enough time to put something together.

### **3. Challenges and Resolutions**

#### ***Student Demonstrations***

ECASE faced a multitude of problems this quarter with students demonstrating at both schools. This disrupted classes, postponed work on capstone projects, cancelled ELP sessions and delayed the delivery of extracurricular activities like Microsoft's Young Women Initiative and threatened the cancellation of field visits to Dow Chemical Factory in Tenth of Ramadan and other venues. The project supports many of these activities and because they were unplanned for, ECASE ended paying for some of the services that were not rendered because the project had to provide the service regardless since the students could change their mind anytime and attend. Student demonstrations had to be dealt with delicately, with wisdom, and a lot of care. While such demonstrations are a manifestation of a general attitude rampant in the country of people looking for their rights, all parties had to collaborate to bring in the message; that demonstrations will eventually harm the students because it will delay or shorten their education and may not render effective results because solutions may be in the hands of high government officials, perhaps even out of the MOE, who are not necessarily affected by such demonstrations.

Although the reasons may have varied from the October School to the Maadi School, and from one demonstration to the other, the common cause, nonetheless, is university admission. Students were concerned about their opportunity to enter top public universities like Medicine, Engineering, Dentistry and Pharmacology and to be admitted in the universities located in their governorates of residence. Parents have had a role to play in these demonstrations too. Some of them wanted to guarantee admission for their children based on their high preparatory school grades.

The Minister of Higher Education have set a formula based on what is known as the "Flexible Ratio" where students from STEM schools are given seats in each faculty based on the ration between the number of their graduates compared to the number of the Thanaweya Amma Science Graduate of that same year. Due to the number of graduate estimated to be slightly over one hundred and the number of Thanaweya Amma Science graduates to be around 150,000, there is a ratio of about 0.1% number of seats in each faculty. Most students see that



as an unfair allocation of seats in university because it does not take into consideration their high achievement background. The Ministry of Higher education, on the contrary, sees that if it favors STEM Schools' graduates, it may be easily sued by other parents claiming favoritism.

ECASE presented the case to the STEM Board held on March 28<sup>th</sup> and collected feedback from most attendees. There was a consensus that STEM Schools students be offered a coefficient to be added to the Flexible Ratio that would help them increase the number of seats allocated to STEM schools in public universities. Also, during the Board meeting, MEK was asked to provide scholarships in country and outside to high achieving students.